Monitoring physicochemical and sensory attributes during debittering of stoned green olives

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Stoned green olives are traditional table olives produced in the Northeast of Portugal. They are highly appreciated due to their organoleptic characteristics and levels of complex phenols endowed with strong antioxidant activity, having a significant agro-economic relevance. During the natural debittering process, stoned olives are immersed in water, which is changed (each 1-2 days), leading to a reduction of the initial bitterness and increase of sweetness, turning these green olive edible [1]. Monitoring total phenols contents, the bitterness index as well as the basic sensorial attributes through this washing stage is very important. In this work, the debittering process of 110 samples of stoned green olives (*cvs.* Cobrançosa and Negrinha de Freixo), was monitoring during 20 days. After each debittering-washing time-period (water changed each 2-days) bitter, pungent and sweet intensities sensations were assessed by trained panelists. Furthermore, the bitterness index and total phenols contents were also evaluated spectrophotometrically. Figure 1 shows the trends observed for the sensory attributes and chemical parameters along the debittering-washing process. From the boxplots (Figure 1), it is clear that bitterness index and total phenols contents significantly decreased with the time, which could be directly related to the observed decrease of the bitter taste intensity (for both olive cultivars) while the decrease of the pungent sensation could be related with the decrease of the total phenols contents, mainly influenced by the increase of the sweet sensation. Furthermore, as can be inferred, the initial bitterness and pungency intensities of *cv*. Cobrançosa olives were higher than those from *cv.* Negrinha de Freixo. Nevertheless, after 16-20 days of debittering-washing steps, the bitter and pungent intensities perceived by the trained panelists, for both olive cultivars, were of the same order of magnitude, showing that the debittering procedure adopted was successful and technologically consistent.

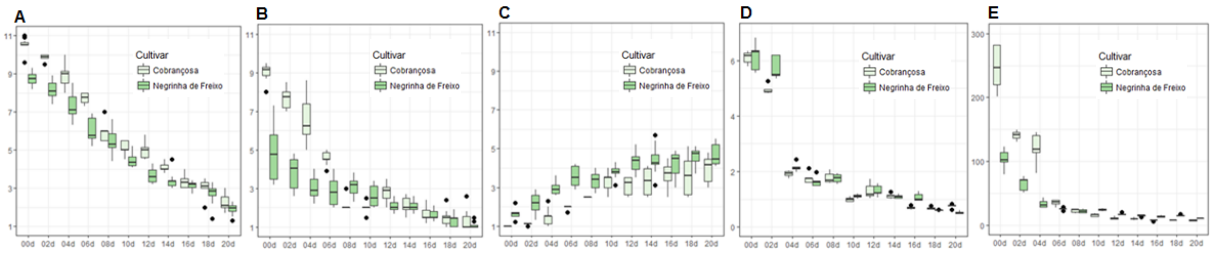

Figure 1. Boxplots showing the time evolution of **(A)** bitter, **(B)** pungent and **(C)** sweet as well as of **(D)** bitterness index (g Oleuropein/ kg) and **(E)** total phenols contents (g GAE/ kg) of the stoned green olives (*cvs.* Cobrançosa and Negrinha de Freixo) during the 20 days of debittering-washing process.

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